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Longitudinal association between takeaway food environment and secondary school adolescents BMI and body fat percentage

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Frequent consumption of takeaway meals has been found to be negatively associated with the diet quality of British adolescents[1]. The Food Environment Policy Index believes that strengthening planning policies to discourage unhealthy fast food is a priority and will have a significant influence on mitigating diet-related diseases and obesity[2]. Planning policies for limiting the clustering of hot food takeaways (HFTs) around schools exists in the UK. However, long-term effectiveness and their impact on health should be studied and explored as few studies have investigated the longitudinal associations with health outcomes among adolescents attending secondary school particularly in the UK[3,4]. Therefore, this study aimed to investigate the relationships between the density, proximity and accessibility of takeaway outlets and the BMI and body fat percentage of UK adolescents from the Avon Longitudinal Study of Parents and Children study conducted between 2005 and 2011.

In total, 52 state-funded schools with 1382 participants (44.5% male) were included in this study. A Geographical Information System was used to locate all schools and takeaways in the region and to measure the density within 800- and 1000- metres and proximity scores, applying the road network method. In addition, the Hansen Index was used to measure the accessibility score of each school to all takeaways in the region. The statistical analysis tests, including linear and logistic regression tests, were conducted to explore the associations between availability, proximity, and accessibility of HFTs at baseline (2007) when the adolescents were 13 years and BMI z–score and body fat percentage status at 15 and17 years in 2009 and 2011; using Stata software, Version 15.0.

Adjusted linear regression showed non-significant associations between availability of HFTs and BMI z–score and body fat percentage at 15 or 17 years when using either an 800- or 1000-metre buffer. An adjusted logistic regression showed non-significant associations between availability of HFTs within 800- and 1000- metres and risk of being obese at 15 years. However, the adjusted logistic analysis showed protective effects between the availability of HFTs within 800- and 1000- metres and the risk of being obese, particularly at 17 years, which was the opposite effect expected. For example, the odds of being obese and attending schools with HFTs was 0.56 (95% CI; 0.41, 0.76) at age 17 years. The proximity of HFTs showed no associations with BMI z–score. Accessibility of HFTs showed small negative but significant associations with BMI z–score and attenuated results with body fatness.

Overall results showed conflicting findings, and further exploration is still needed. An intensive understanding of the effect of the food environment, particularly around secondary schools, is needed, especially using more recent data for both the exposure and health outcomes.

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References

1. Taher AK, N Evans & CE Evans (2019) *Public Health Nutr*. **22**(1), 63–73.
2. Food Foundation, *Food EPI: Policy Briefing* (2016) [Available at: http://foodfoundation.org.uk/publications].
3. Keeble M *et al*. (2019) *Health Place* **57**, 171–178.
4. House of Commons Health Committee, *Childhood obesity* (2017) [Available at: https://publications.parliament.uk/pa/cm201617/cmselect/cmhealth/928/928.pdf].